

FORM PTO-1390 (Modified)
(REV 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

210149US0PCT

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/868920INTERNATIONAL APPLICATION NO.
PCT/JP00/07897INTERNATIONAL FILING DATE
09 November 2000PRIORITY DATE CLAIMED
12 November 1999 (earliest)TITLE OF INVENTION
SOFTENER COMPOSITIONAPPLICANT(S) FOR DO/EO/US
HAYASHI Hiromitsu et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☒ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☐ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Notice for Consideration of Documents Cited in International Search Report/Notice of Priority/PCT/IB/304

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.492(a)(1) - (5)) : 09/868920		INTERNATIONAL APPLICATION NO. PCT/JP00/07897		ATTORNEY'S DOCKET NUMBER 210149US0PCT	
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24. The following fees are submitted:				CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1000.00 <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$860.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00					
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$860.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (e)). <input checked="" type="checkbox"/> 20 <input type="checkbox"/> 30				\$130.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	4 - 20 =	0	x \$18.00	\$0.00	
Independent claims	1 - 3 =	0	x \$80.00	\$0.00	
Multiple Dependent Claims (check if applicable).				<input type="checkbox"/> \$0.00	
TOTAL OF ABOVE CALCULATIONS =				\$990.00	
<input type="checkbox"/> Applicant claims small entity status. (See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				\$0.00	
SUBTOTAL =				\$990.00	
Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)). <input type="checkbox"/> 20 <input type="checkbox"/> 30				\$0.00	
TOTAL NATIONAL FEE =				\$990.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				\$0.00	
TOTAL FEES ENCLOSED =				\$990.00	
				Amount to be:	\$
				refunded	
				charged	\$

a. ☒ A check in the amount of \$990.00 to cover the above fees is enclosed.


b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 15-0030 A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:



22850

Surinder Sachar
Registration No. 34,423

SIGNATURE

Norman F. Oblon
NAME

24,618
REGISTRATION NUMBER

July 11 2001
DATE

210149US-0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
HIROMITSU HAYASHI ET AL : ATTN: APPLICATION DIVISION
SERIAL NO: NEW U.S. PCT APPLN :
(Based on PCT/JP00/07897)
FILED: HEREWITH :
FOR: SOFTENER COMPOSITION :

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Prior to examination on the merits, please amend the above-identified application as follows.

IN THE SPECIFICATION

Please amend the specification as shown on the marked-up copy following this amendment to read as follows:

Please replace the paragraph beginning on page 7, line 26, through page 8, line 8, with the following:

The softener composition of the present invention is preferably in the form of an aqueous solution comprising at least the component (a) and the component (b) and the component (c) or (d), diluted in water. The water used is preferably distilled water or deionized water. It is desirable for storage stability that water is incorporated in an amount of

09/868920-072501

40 to 90% by weight, more preferably 50 to 80% by weight and particularly preferably 60 to 85% by weight into the composition.

Please replace the paragraph beginning on page 11, line 10, with the following:

Ingredients such as silicone being ordinarily incorporated into a fiber-treating agent, a perfume (particularly preferably a combination of aroma components shown as the components (c) and (d) described in JP-A 8-113871) and a coloring matter may be incorporated into the softener composition of the present invention.

Please replace the paragraph on page 12, line 10, beginning at (a - 5), with the following paragraph:

(a - 5) Di(oleoyl oxyethyl) dimethyl ammonium methyl sulfate.

IN THE CLAIMS

Please amend Claim 3 as follows:

3. (Amended) The softener composition according to claim 1, which further comprises 0.1 to 5% by weight of (f) a C₈₋₂₂ fatty acid or a salt thereof.

Please add new Claim 4 as follows:

4. (New) The softener composition according to Claim 1 which further comprises (e) a nonionic surfactant and 0.1 to 5% by weight of (f) a C₈₋₂₂ fatty acid or salt thereof.

REMARKS

Claims 1-4 are active in the present application. Claim 3 has been amended to remove multiple dependency. New Claim 4 is supported by original Claims 2 and 3. The Specification has been amended to correct for clerical and typographical errors. No new matter is believed to have been added. An action on the merits and allowance of claims is solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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Marked-Up Copy

Serial No:

Amendment Filed on:

07-11-01

IN THE SPECIFICATION

Please replace the paragraph beginning on page 7, line 26, through page 8, line 8, with the following:

--The softener composition of the present invention is preferably in the form of an aqueous solution comprising at least the component (a) and the component (b) [(c) or the component (b)] and the component (c) or (d), diluted in water. The water used is preferably distilled water or deionized water. It is desirable for storage stability that water is incorporated in an amount of 40 to 90% by weight, more preferably 50 to 85% by weight and particularly preferably 60 to 85% by weight into the composition.--

Please replace the paragraph beginning on page 11, line 10, with the following:

--Ingredients such as silicone being ordinarily incorporated into a fiber-treating agent, a perfume (particularly preferably a combination of aroma components shown as the components (c) and (d) described in JP-A 8-[11387] 113871) and a coloring matter may be incorporated into the softener composition of the present invention.--

Please replace the paragraph on page 12, line 10, beginning at (a - 5), with the following paragraph:

--(a - 5) Di(oleoyl [hydr]oxyethyl) dimethyl ammonium methyl sulfate.--

IN THE CLAIMS

Please amend Claim 3 as follows:

--3. (Amended) The softener composition according to claim 1 [or 2], which further comprises 0.1 to 5% by weight of (f) a C₈₋₂₂ fatty acid or a salt thereof.

Claim 4 (New).--

DESCRIPTION

SOFTENER COMPOSITION

Technical Field

The present invention relates to a softener composition.

Background Art

Heretofore, quaternary ammonium salts having long-chain alkyl group, acid salts of tertiary amines, etc. have been used for softeners. Further, compounding of a softener composition with an antimicrobial agent has been attempted for sanitation and deodorization of fiber products. JP-A 10-512015 discloses a softener composition comprising a water-insoluble quaternary ammonium salt as a softener and a water-soluble quaternary ammonium salt as an antimicrobial agent compounded therein. In addition, JP-A 7-3649 discloses a fiber product-softener composition, having pH 2 to 5, comprising a di-long-chain-alkyl amine (C_{6-24} alkyl or alkenyl group which may be interrupted by an ether linkage, ester linkage or acid amide linkage) and a mono-long-chain-alkyl quaternary ammonium salt (C_{6-24} alkyl or alkenyl group which may be interrupted by an ether linkage, ester linkage or acid amide linkage), at a weight ratio of from 9 : 1 to 5 : 5. WO 98/56886 discloses an antimicrobial fiber softener composition, being suitable for conferring antimicrobial performance on fibers, comprising a conventional fiber softener composition and one or more cationic

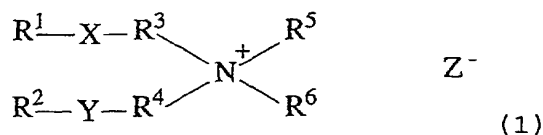
antimicrobial agents in a larger amount than required for antimicrobial performance. It, however, is a problem that the antimicrobial water-soluble quaternary ammonium salt lowers the softening effect. The softening effect is necessarily sacrificed in order to attain a satisfactory antimicrobial effect. In particular, it is difficult to achieve a composition demonstrating both a high softening effect and antimicrobial performance being capable of suppressing for long nasty smell attributable to microorganisms when clothes are dried in a room and body smell derived from sweat at the time of wearing.

Disclosure of Invention

Accordingly, the purpose of the present invention is to provide a softener composition which suppresses for long body smell derived from sweat etc. and is excellent in the softening effect.

The present invention relates to a softener composition comprising:

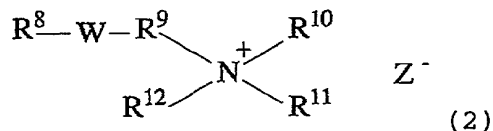
- (a) a quaternary ammonium compound represented by the formula (1):



wherein R^1 and R^2 independently represent a C_{12-22} alkyl or alkenyl group, X and Y are independently $-\text{COO}-$, $-\text{CONR}^7-$, $-\text{OCO}-$ or $-\text{NR}^7\text{CO}-$, preferably provided that at least one of X and Y is $-\text{COO}-$

or -OCO-. R⁷ represents a hydrogen atom or a C₁₋₃ alkyl or hydroxyalkyl group. R³ and R⁴ independently represent a C₁₋₅ alkylene group, R⁵ and R⁶ represent a C₁₋₃ alkyl or hydroxyalkyl group or R¹-X-R³-, and Z⁻ is an anionic group,

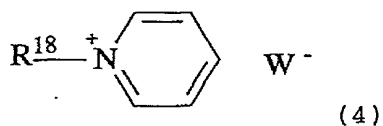
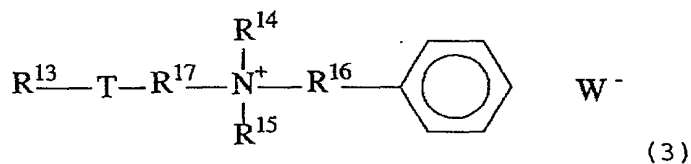
(b) a quaternary ammonium compound represented by formula (2):



wherein R⁸ represents a C₁₂₋₂₂ alkyl or alkenyl group, W is a group selected from -COO-, -CONR⁷-, -OCO- and -NR⁷CO-, R⁷ represents a hydrogen atom or a C₁₋₃ alkyl or hydroxyalkyl group, preferably a hydrogen atom, R⁹ represents a C₁₋₅ alkylene group, R¹⁰ and R¹¹ represent a C₁₋₃ alkyl or hydroxyalkyl group, R¹² represents a C₁₋₃ alkyl group or -R²⁶-OH, R²⁶ is a C₁₋₅ alkylene group and Z⁻ is an anionic group, and

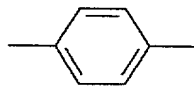
a compound selected from the following component (c) or (d):

(c) 0.1 to 15 % by weight of a compound represented by formula (3) and/or formula (4):



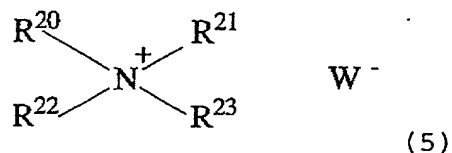
wherein R¹³ and R¹⁸ independently represent a C₅₋₁₉ alkyl or alkenyl group, R¹⁴ and R¹⁵ independently represent a C₁₋₃ alkyl or

hydroxyalkyl group, and T is -COO-, -OCO-, -CONH-, -NHCO-,



or a linkage; R^{16} represents a C_{1-3} alkylene group, R^{17} represents a C_{1-6} alkylene group or $-(O-R^{19})_n$, R^{19} is ethylene group or propylene group and n is a number of 1 to 10 and W^- is an anionic group, and

(d) 0.01 to 15 % by weight, preferably 0.1 to 15 % by weight of a compound represented by formula (5):

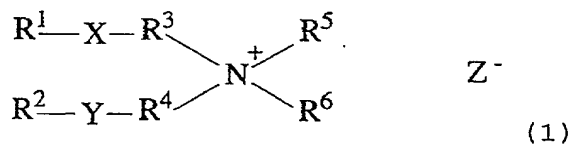


wherein 2 or 3 groups of R^{20} , R^{21} , R^{22} and R^{23} represent a C_{8-12} alkyl group while the remainder(s) represents a C_{1-3} alky group, C_{1-3} hydroxyalkyl group or C_{7-15} arylalkyl group, and Z^- is an anionic group.

As used herein, the "linkage" refers to a covalent bond directly linking R^{13} with R^{17} .

Best Mode for Carrying Out the Invention

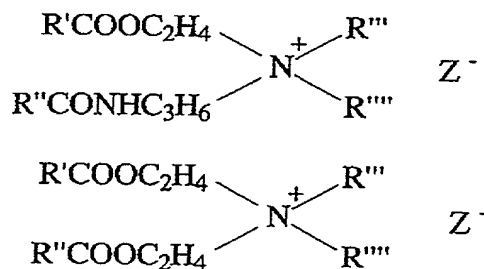
The component (a) of the present invention is a compound having the formula (1):



in which R^1 and R^2 independently represent a C_{12-22} , preferably

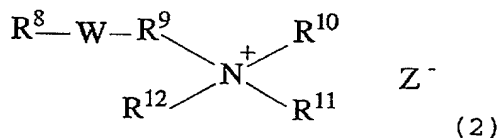
C₁₄₋₂₂ and more preferably C₁₄₋₁₈ alkyl or alkenyl group, X and Y independently represent a group selected from -COO-, -CONR⁷-, -OCO- and -NR⁷CO-, and preferably at least one of X and Y is -COO- or -OCO-; X and Y are preferably -COO- or -OCNR⁷-. R⁷ represents a hydrogen atom or a C₁₋₃ alkyl or hydroxyalkyl group. R³ and R⁴ independently represent a C₁₋₅ alkylene group, R⁵ and R⁶ represent a C₁₋₃ alkyl or hydroxyalkyl group or R¹-X-R³-, and Z⁻ is an anionic group. Z⁻ is preferably a halogen ion, sulfate ion, phosphate ion, a C₁₋₃ alkyl sulfate ion or a C₁₋₁₂ fatty acid ion.

The component (a) is particularly preferably the following compound.



R' and R'' may be the same as or different from each other and represent a C₁₂₋₁₈ alkyl or alkenyl group; R''' is a C₁₋₃ alkyl or hydroxyalkyl group; and R'''' is a C₁₋₃ alkyl group.

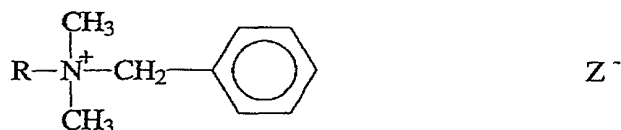
The component (b) of the present invention is a compound represented by formula (2):



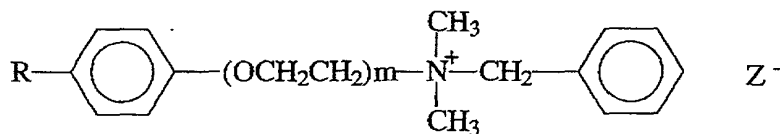
wherein R⁸ represents a C₁₂₋₂₂, preferably C₁₄₋₂₂ and more

preferably C₁₄₋₁₈ alkyl or alkenyl group, W is -COO-, -CONR⁷-, -OCO- or -NR⁷CO-, preferably -COO- or -OCNR⁷-. R⁷ represents a hydrogen atom or a C₁₋₃ alkyl or hydroxyalkyl group, preferably a hydrogen atom. R⁹ is a C₁₋₅ alkylene group and R¹⁰ and R¹¹ independently represent a C₁₋₃ alkyl or hydroxyalkyl group. R¹² is a C₁₋₃ alkyl group or -R²⁶-OH. R²⁶ is a C₁₋₅ alkylene group. Z⁻ is an anionic group, preferably a halogen ion, a fatty acid ion or a C₁₋₃ alkyl sulfate ion.

The component (c) of the present invention is a compound of the formula (3) or (4) above shown. As the most preferable component (c), the following compounds can be exemplified. In the formulae, Z⁻ has the meanings as defined above.



(R is a C₁₂₋₁₆ alkyl group.)



(R is an optionally branched C₆₋₁₀ alkyl group and m is an integer of 1 to 5.)



(R is a C₈₋₁₈ alkyl group.)

The component (d) of the present invention is a compound of the formula (5) above shown and the anionic group represented

by W of the formula (5) is preferably a sulfate ion, a halogen ion, a C₁₋₁₂ fatty acid ion or a C₁₋₃ alkyl sulfate ion.

(Softener composition)

The softener composition of the present invention comprises the component (a) in an amount of preferably 3 to 50 % by weight, more preferably 3 to 40 % by weight and particularly preferably 5 to 35 % by weight. Further, the amount of the component (b) is 0.5 to 10 % by weight, preferably 0.5 to 5 % by weight. In addition, it is preferable to the softening effect and the deodorizing effect that a weight ratio of the component (a)/the component (b) is from 80/20 to 99/1, particularly from 85/15 to 95/1.

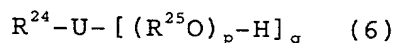
When the component (c) is used in the present invention, the component (c) is contained in an amount of 0.1 to 15 % by weight, preferably 1 to 15 % by weight and particularly preferably 3 to 10 % by weight. Further, it is desirable to the feeling in touch of clothes and the deodorizing effect that the ratio of (c)/(a) by weight is from 1/30 to 1/1, preferably from 1/10 to 1/1. Further, when the component (d) is used in the present invention, it is desirable to the feeling in touch of clothes and the deodorizing effect that the amount of the component (d) is preferably 0.1 to 15 % by weight, more preferably 0.2 to 10 % by weight, and a weight ratio of (a)/(d) is from 50/1 to 2/1, preferably from 30/1 to 2/1, and more preferably from 20/1 to 2/1.

The softener composition of the present invention is

preferably in the form of an aqueous solution comprising at least the component (a) and the component (c) or the component (b) and the component (d), diluted in water. The water used is preferably distilled water or deionized water. It is desirable for storage stability that water is incorporated in an amount of 40 to 90 % by weight, more preferably 50 to 85 % by weight and particularly preferably 60 to 85 % by weight into the composition.

Further, it is preferable to the deodorizing effect and for storage stability that the composition of the present invention is adjusted to a pH value of 1 to 6, further 2 to 5, and particularly 2.5 to 4 at 20 °C.

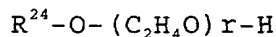
In the present invention, incorporation of a nonionic surfactant (e) in addition to the above components (a), (b), (c) and (d) is preferable for storage stability. The nonionic surfactant is preferably a polyoxyethylene alkyl ether containing one or more C₈₋₂₀ alkyl or alkenyl group, particularly preferably a nonionic surfactant of the formula (6):



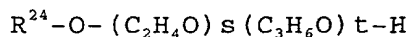
wherein R²⁴ is a C₁₀₋₁₈, preferably C₁₂₋₁₈, alkyl or alkenyl group, R²⁵ is a C₂ or C₃ alkylene group, preferably an ethylene group; p is an integer of 2 to 100, preferably 5 to 80, more preferably 10 to 80 and particularly preferably 20 to 60; and U is -O-, -CON- or -N-, and when U is -O-, q is 1, and when U is -CON- or -N-, q is 2.

The compound of the formula (6) includes for example the

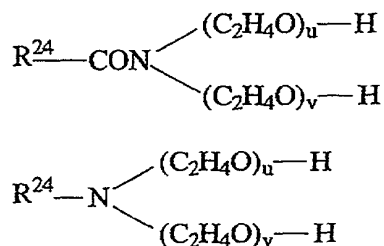
following compounds:



wherein R^{24} has the same meanings as defined above; and when the component (c) is contained, r is an integer of 8 to 100, and when the component (d) is contained, r is an integer of 5 to 100, preferably 10 to 80 and more preferably 20 to 80.



wherein R^{24} has the same meanings as defined above; s and t are independently an integer of 2 to 40, preferably 5 to 40, and the sum of s and t is preferably an integer of 10 to 80, and the ethylene oxide and propylene oxide units may be a random- or block-addition product.



wherein R^{24} has the same meanings as defined above; and when the component (c) is contained, the sum in total of u and v is an integer of 5 to 100 and when the component (d) is contained, the sum in total thereof is an integer of 10 to 80, preferably 5 to 80.

From the viewpoint of stability, the amount of the nonionic surfactant incorporated is 0.5 to 10 % by weight, preferably 1 to 8 % by weight.

For the purpose of improving the feeling in touch of fiber

products, in the present invention, (f) a C_{8-22} fatty acid or a salt thereof is preferably added in an amount of 0.1 to 5 % by weight, particularly 0.5 to 3 % by weight.

The fatty acid or a salt thereof includes caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid or a mixture thereof. One or more members selected from lauric acid, stearic acid and oleic acid are particularly preferable. Further, fatty acids having an alkyl composition derived from coconut oil, palm oil, palm seed oil or tallow are also preferable.

In the present invention, it is preferable for storage stability that an ester compound of a C_{8-22} saturated or unsaturated fatty acid and a polyvalent alcohol is incorporated in an amount of 0.1 to 10 % by weight, particularly 0.5 to 5 % by weight into the composition. The ester compound is preferably triglycerides, diglycerides, monoglyceride, a mono-, di- or tri-ester of pentaerythritol and sorbitan ester.

In the present invention, it is desirable for storage stability that inorganic salts such as calcium chloride are added in an amount of 0 to 1000 ppm, preferably 1 to 1000 ppm, and more preferably 10 to 500 ppm. Sodium salts and potassium salts are contained in surfactants such as fatty acid salts and the inorganic salts mixed in the composition by using such surfactants are not subject to the above limitation.

In the present invention, a solvent component selected from ethanol, isopropanol, glycerin, ethylene glycol,

propylene glycol, diethylene glycol, dipropylene glycol and polyoxyethylene phenyl ether is further preferably incorporated for storage stability. These solvent components are incorporated in an amount of preferably 0 to 20 % by weight, more preferably 0.1 to 20 % by weight and particularly preferably 0.5 to 10 % by weight into the composition. If ethanol is used, it is desirable to use a polyoxyethylene alkyl ether sulfate-modified ethanol or an 8-acetylated sucrose-modified ethanol.

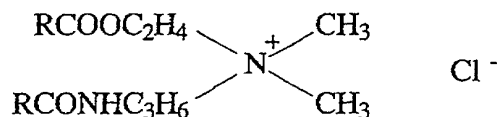
Ingredients such as silicone being ordinarily incorporated into a fiber-treating agent, a perfume (particularly preferably a combination of aroma components shown as the components (c) and (d) described in JP-A 8-11387) and a coloring matter may be incorporated into the softener composition of the present invention.

Examples

<Compounding ingredients>

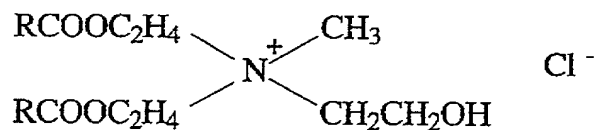
The ingredients used in the present invention are shown below.

(a-1)



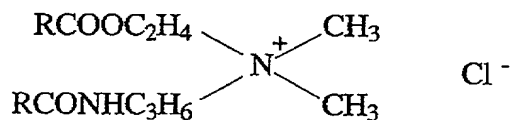
R: a mixed C₁₈ and C₁₆ saturated alkyl group (ratio by weight of C₁₈ group/C₁₆ group = 60/40)

(a-2)



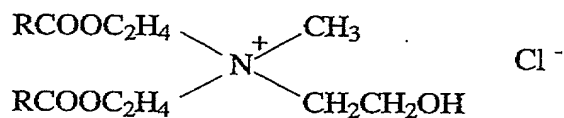
R: a mixed C₁₈ and C₁₆ saturated alkyl group (ratio by weight of C₁₈ group/C₁₆ group = 60/40)

(a-3)



R: a mixed C₁₇ and C₁₅ saturated alkyl group (ratio by weight of C₁₇ group/C₁₅ group = 60/40)

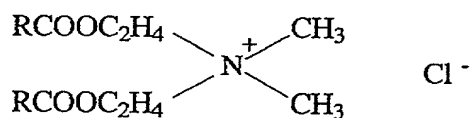
(a-4)



R: a mixed C₁₇ and C₁₅ saturated alkyl group (ratio by weight of C₁₇ group/C₁₅ group = 60/40)

(a-5) Dioleoyl hydroxyethyl dimethyl ammonium methyl sulfate.

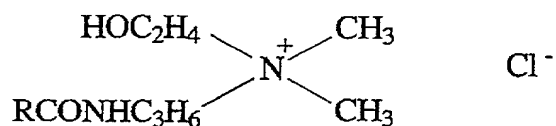
(a-6)



R: a mixed C₁₇ and C₁₅ saturated alkyl group (ratio by weight of C₁₇ group/C₁₅ group = 60/40)

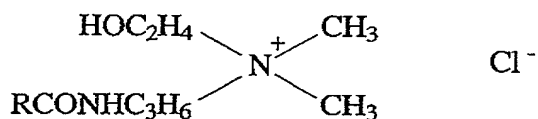
(a'-1) Dioleoyl dimethyl ammonium chloride.

(b-1)



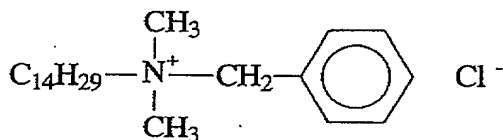
R: a mixed C₁₈ and C₁₆ saturated alkyl group (ratio by weight of C₁₈ group/C₁₆ group = 60/40)

(b-2)

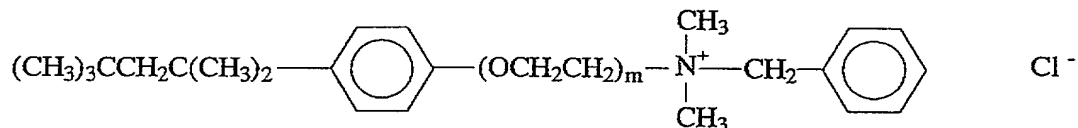


R: a mixed C₁₇ and C₁₅ saturated alkyl group (ratio by weight of C₁₇ group/C₁₅ group = 60/40)

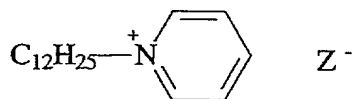
(c-1)



(c-2)



(c-3)



(d-1) Didecyl dimethyl ammonium chloride.

(e-1) An addition product of a saturated alcohol containing 12 carbon atoms to which 21 moles on the average of ethylene oxide have been added.

(e-2) An addition product of lauric acid diethanolamide to which

20 moles on the average of ethylene oxide have been added.

(f-1) LunackTM S-50 (stearic acid produced by Kao Corporation).

(f-2) Lauric acid.

(f-3) Myristic acid.

(f-4) Palmitic acid.

(g-1) ExcelTM 150 [a mixture of stearic mono-, di- and triglycerides (mono : di : tri = 60 : 35 : 5) produced by Kao Corporation].

(g-2) Calcium chloride.

(g-3) Ethylene glycol.

(h-1) Coloring matter (Acid blue 9).

(h-2) Perfume [a mixture of hexyl cinnamic aldehyde (18), nerolin yarayara (4), tricyclodecenyl acetate (4), benzyl acetate (10), musk ketone (5), anisyl acetone (2), sandal mysolcore (2), aldehyde C14 peach (1), linalool (18), dihydroxy myrcenol (8), borneol (4), cedrol (4), mugoal (5), benzyl alcohol (5) and dipropylene glycol (10), the figures shown in the parentheses meaning a percent by weight in the perfume mixture.].

(h-3) Silicone (TSA730 produced by Toshiba Silicone Co., Ltd.).

Example 1

Using the above compounds, the softener compositions shown in Table 1 were prepared (invention products 1 to 6 and comparative products 1 to 3). Two sweaters (100 % cotton) were washed using a commercial weakly alkaline detergent (AttackTM, Kao Corporation) in a laundering machine (two-tank system

laundering machine VH-360S1 manufactured by Toshiba Corp.; detergent concentration, 0.0667 % by weight; 30 L tap water used; water temperature of 20 °C; 10 minutes). Thereafter, the washing water was discharged and the clothes were dehydrated for 1 minute. After 30 L tap water was poured into the tank, the clothes were rinsed for 5 minutes, the water was discharged, and the clothes were dehydrated for 1 minute. Then, 30 L tap water was again poured into the tank, and 5 g of each softener composition of Table 1 was added thereto. It was stirred for 5 minutes. Thereafter, the clothes were dehydrated and dried for 12 hours in a thermostatic chamber at 70 % RH at 25 °C. (Evaluation of softening performance)

The softener compositions of Table 1 and the corresponding compositions to them, except that the antimicrobial component, the component (c) or (d), was not added, were used in the softening treatment described above. They were evaluated in a paired comparison test using the following criteria by a panel of 10 persons to determine a mean value.

+1: Finished to be the softer in the presence of component (c) or (d).

0: No difference in finish regardless of the presence or absence of the component (c) or (d).

-1: Finished to be the softer in the absence of the component (c) or (d).

(Evaluation of smell)

The smell of the clothes dried in a thermostatic chamber

and the smell of the same clothes worn for 12 hours by 5 males, aged twenties, were judged using the following criteria by a panel of 10 persons (10 males aged thirties), to determine a mean value.

0: Hardly smelled.

1: Slightly smelled but not annoying.

2: Smelled.

3: Significantly smelled.

Table 1

Softener Composition	Component (wt%)	Product of the present Invention										Comparative Product			
		1	2	3	4	5	6	1	2	3	4	1	2	3	4
	(a-1)	15		6											15
	(a-2)		15												
	(a-3)				15		6								
	(a-4)					15									
	(a-5)														
	(c-1)	5			5			15				15	15	7.5	5
	(c-2)		5			5						5			
	(c-3)			3			3								
	(d-1)														
	(e-1)	2		2	2		2	2	2	2	2	2	2	2	2
	(e-2)		2			2									
	(f-1)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(g-1)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	(g-2)	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm
	(g-3)	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	(b-1)	1.5	1.5	0.5											
	(b-2)				1.5	1.5	0.5								
	(h-1)	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm
	(h-2)	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm	50 ppm
	(h-3)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	deionized water	balance	←	←	←	←	←	←	←	←	←	←	←	←	←
	Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	pH (20°C)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Smell	Clothes after drying	0.6	0.4	0.6	0.6	0.4	0.6	1.3	1.4	1.5	1.2	1.4	1.7	1.7	1.5
	Clothes after worn	1.1	1	1.2	1.1	1	1.2	1.4	1.7	1.7	1.5	1.7	1.7	1.7	1.5
	Softening Performance	0.2	0.1	0.1	0.2	0.1	0.1	-0.3	-0.4	-0.5	-0.2	-0.3	-0.4	-0.5	-0.2

*pH was obtained by adjustment with 0.1 N aqueous sulfuric acid or 0.1 N sodium hydroxide solution.

Example 2

The softener compositions (invention products 7 to 11) shown in Table 2 were prepared in the same manner as in Example 1. As the perfume, a mixture of 100 parts by weight of a composition of Table 3 and 10 parts by weight of dipropylene glycol was used. These softener compositions were evaluated in the same manner as in Example 1. As results they were all recognized to exhibit an excellent smell-preventing effect and softening performance.

Table 2

			Product of the present Invention				
			7	8	9	10	11
Softener Composition	Component (wt%)	(a-1)	15	15		15	
		(a-2)			15		15
		(c-1)	3	3		3	
		(c-2)			3		3
		(e-1)	2	2		2	
		(e-2)			2		2
		(f-1)	1	1	1	1	1
		(g-1)	1	1	1	1	1
		(g-2)	100 ppm	100 ppm	100 ppm	100 ppm	100 ppm
		(b-1)	1.5	1.5	1.5	1.5	1.5
		(h-1)	10 ppm	10 ppm	10 ppm	10 ppm	10 ppm
		Perfume (described in Table 3)	perfume 1 0.37	perfume 2 0.25	perfume 3 0.3	perfume 4 0.3	perfume 5 0.3
		deionized water	balance	←	←	←	←
		Total	100	100	100	100	100
	pH (20°C)	3.5	3.5	3.5	3.5	3.5	3.5

*The pH was obtained by adjustment with 0.1 N aqueous sulfuric acid or 0.1 N sodium hydroxide solution.

Table 3

Perfume Ingredient (wt%)	Perfume 1	Perfume 2	Perfume 3	Perfume 4	Perfume 5
hexyl cinnamic aldehyde	0	0	13	0	0
Nerolin yarayara	0	0	3	0	0
tricyclodecenyl acetate	0	0	3	0	0
benzyl acetate	0	0	7	0	0
musk ketone	0	0	3	0	0
anisyl acetone	0	0	1	0	0
Sandalmysore core	0	0	1	0	0
Aldehyde C14 peach	0	0	1	0	0
Metyl ionone- γ	7	0	0	3	0
Iso E Super	7	0	0	3	0
Tentarome	14	0	0	7	0
4-t-butylcyclohexylacetate	14	0	0	7	0
Lilial	20	0	0	10	0
Herional	3	0	0	2	0
coumarin	3	0	0	1	0
Ambroxan	1	0	0	0	0
α -Terpinyl acetate	0	12	0	0	20
cedryl acetate	0	8	0	0	13
Lylal	0	8	0	0	13
Pearlide	0	4	0	0	7
Sandal synth	0	4	0	0	7
phenylacetaldehyde 50% PEA	0	0	0	0	1
aldehyde C12MNA	0	0	0	0	1
cinnamyl cinnamate	0	2	0	0	3
benzyl isoeugenol	0	2	0	0	3
linalool	0	0	0	0	13
dihydromyrcenol	0	0	0	0	7
borneol	0	0	0	0	3
cedrol	0	0	0	0	3
Muguol	0	0	0	0	3
benzyl alcohol	0	0	0	0	3
phenylethyl alcohol	12	0	29	0	0
citronellol	6	0	13	0	0
terpineol	6	0	13	0	0
phenylethyldimethyl carbinol	3	0	7	0	0
styrallyl alcohol	2	0	3	0	0
cinnamic alcohol	2	0	3	0	0
1-menthol	0	24	0	27	0
geraniol	0	12	0	13	0
dihydromyrcenol	0	12	0	13	0
Phenyl hexanol	0	6	0	7	0
dimethylbenzyl carbinol	0	6	0	7	0
Total (wt%)	100	100	100	100	100

Example 3

Using the above compounds, the softener compositions shown in Table 4 were prepared. Five shirts (100 % cotton) and 5 towels (100 % cotton) (total weight of the clothes: 1.5 kg) were washed using a commercial weakly alkaline detergent (Attack™, Kao Corporation) in a laundry machine (two-tank system laundering machine VH-360S1 manufactured by Toshiba Corp.; detergent concentration, 0.0667 % by weight; 30 L tap water used; water temperature of 20 °C; 10 minutes). Thereafter, the washing water was discharged and the clothes were dehydrated for 1 minute. After 30 L tap water was poured into the tank, the clothes were rinsed for 5 minutes, the water was discharged, and the clothes were dehydrated for 1 minute. Then, 30 L tap water was again poured into the tank and 7 ml of each composition of Table 1 was added thereto. It was stirred with the clothes for 5 minutes. Thereafter the clothes were dehydrated and air-dried.

(Evaluation of deodorizing effect)

The clothes treated as above were worn for 12 hours by 5 males aged twenties, and the smell generated from the shirts worn were judged using the following criteria by a panel of 10 persons (10 males aged thirties), to determine a mean value. ○ was assigned to a mean value of less than 0.8, □ to a mean value of 0.8 to less than 1.2, △ to a mean value of 1.2 to less than 1.7, and X to a mean value of 1.7 or more. Results are shown in Table 1.

- 0: Hardly smelled.
1: Slightly smelled but not annoying.
2: Smelled.
3: Significantly smelled.

(Evaluation of softness)

The towels treated as above and towels (control) treated in the same way, except for using no composition of Table 4, were judged using the following criteria by a panel of 10 persons (10 males aged thirties), to determine a mean value. ○ was assigned to a mean value of 2 or more, □ to a mean value of 1 to less than 1.5, △ to a mean value of 0.5 to less than 1, and X to a mean value of less than 0.5. Results are shown in Table 1.

- +3: much softer than the control.
+2: Softer than the control.
+1: Slightly softer than the control.
0: Equal to the control.

Table 4

Component (wt%)		Product of the present Invention		Comparative Product	
		12	13	5	6
Softener Composition	a-3	12			12
	a-6		12		
	b-2	2	2		
	a'-1			7.5	
	d-1	3	5	10	1
	f-2	1			
	f-4		2		
	e-1	5		5	5
	e-2		5		
	g-2	100ppm	100ppm	100ppm	100ppm
	h-1	10ppm	10ppm	10ppm	10ppm
	h-3	0.3	0.3	0.3	0.3
	pH adjuster and deionized water	balance	←	←	←
	pH*	2.5	2.5	1	2.5
	Total	100 wt%			
(a)/(d)		4.6/1	2.8/1	0.75/1	12/1
Evaluation of Smell		○	○	△	□
Softening Effect		○	○	×	□

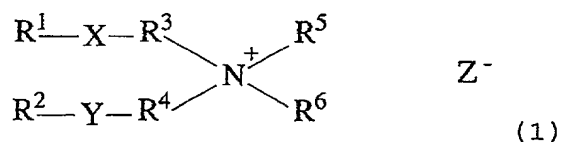
*The pH was obtained by adjustment with 0.1 N aqueous sulfuric acid or 0.1 N sodium hydroxide solution.

CLAIMS

1. A softener composition comprising:

(a) a quaternary ammonium compound represented by the formula

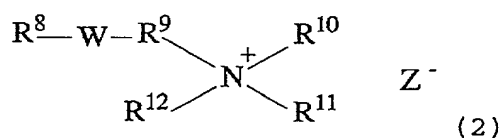
(1):



wherein R^1 and R^2 independently represent a C_{12-22} alkyl or alkenyl group, X and Y are independently $-\text{COO}-$, $-\text{CONR}^7-$, $-\text{OCO}-$ or $-\text{NR}^7\text{CO}-$, provided that at least one of X and Y is $-\text{COO}-$ or $-\text{OCO}-$, R^7 represents a hydrogen atom or a C_{1-3} alkyl or hydroxyalkyl group, R^3 and R^4 independently represent a C_{1-5} alkylene group, R^5 and R^6 represent a C_{1-3} alkyl or hydroxyalkyl group or $\text{R}^1-\text{X}-\text{R}^3-$ and Z^- is an anionic group,

(b) a quaternary ammonium compound represented by the formula

(2):

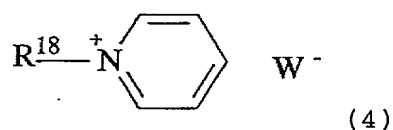
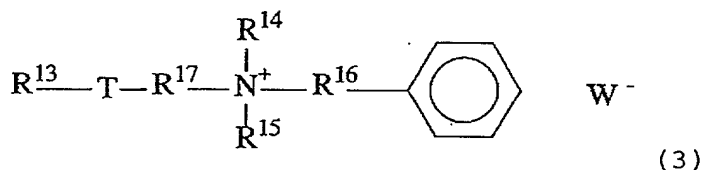


wherein R^8 represents a C_{12-22} alkyl or alkenyl group, W is a group selected from $-\text{COO}-$, $-\text{CONR}^7-$, $-\text{OCO}-$ and $-\text{NR}^7\text{CO}-$, R^7 represents a hydrogen atom or a C_{1-3} alkyl or hydroxyalkyl group, preferably a hydrogen atom, R^9 represents a C_{1-5} alkylene group, R^{10} and R^{11} represent a C_{1-3} alkyl or hydroxyalkyl group, R^{12} represents a C_{1-3} alkyl group or $-\text{R}^{26}-\text{OH}$, R^{26} is a C_{1-5} alkylene group and Z^-

is an anionic group, and

a compound selected from the following component (c) or (d):

(c) 0.1 to 15 % by weight of a compound represented by formula (3) and/or formula (4):

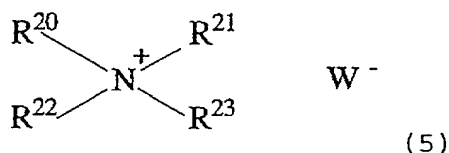


wherein R^{13} and R^{18} independently represent a C_{5-19} alkyl or alkenyl group, R^{14} and R^{15} independently represent a C_{1-3} alkyl or hydroxyalkyl group, and T is $-\text{COO}-$, $-\text{OCO}-$, $-\text{CONH}-$, $-\text{NHCO}-$,



or a linkage, R^{16} represents a C_{1-3} alkylene group, R^{17} represents a C_{1-6} alkylene group or $-(\text{O}-\text{R}^{19})_n-$, R^{19} is ethylene group or propylene group and n is a number of 1 to 10 and W^{-} is an anionic group, and

(d) 0.01 to 15 % by weight of a compound represented by formula (5):



wherein 2 or 3 groups out of R^{20} , R^{21} , R^{22} and R^{23} represent a C_{8-12} alkyl group, the remainder of them represent a C_{1-3} alkyl group,

a C₁₋₃ hydroxyalkyl group or a C₇₋₁₅ arylalkyl group and Z⁻ is an anionic group.

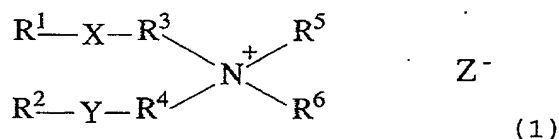
2. The softener composition according to claim 1, which further comprises (e) a nonionic surfactant.

3. The softener composition according to claim 1 or 2, which further comprises 0.1 to 5 % by weight of (f) a C₈₋₂₂ fatty acid or a salt thereof.

ABSTRACT

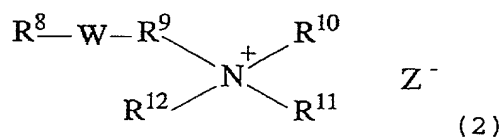
The purpose of the present invention is to provide a softener composition which suppresses for a long time body smell derived from sweat etc. and is excellent in the softening effect. That is, the present invention relates to a softener composition comprising:

- (a) a quaternary ammonium compound represented by the formula (1):



wherein R^1 and R^2 independently represent a C_{12-22} alkyl or alkenyl group, X and Y are independently $-\text{COO}-$, $-\text{CONR}^7-$, $-\text{OCO}-$ or $-\text{NR}^7\text{CO}-$, provided that at least one of X and Y is $-\text{COO}-$ or $-\text{OCO}-$, R^7 represents a hydrogen atom or a C_{1-3} alkyl or hydroxyalkyl group, R^3 and R^4 independently represent a C_{1-5} alkylene group, R^5 and R^6 represent a C_{1-3} alkyl or hydroxyalkyl group or $\text{R}^1-\text{X}-\text{R}^3-$ and Z^- is an anionic group,

- (b) a quaternary ammonium compound represented by the formula (2):



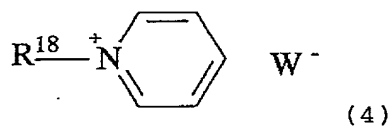
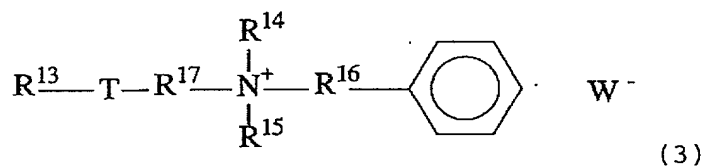
wherein R^8 represents a C_{12-22} alkyl or alkenyl group, W is a group selected from $-\text{COO}-$, $-\text{CONR}^7-$, $-\text{OCO}-$ and $-\text{NR}^7\text{CO}-$, R^7 represents

a hydrogen atom or a C₁₋₃ alkyl or hydroxyalkyl group, preferably a hydrogen atom, R⁹ represents a C₁₋₅ alkylene group, R¹⁰ and R¹¹ represent a C₁₋₃ alkyl or hydroxyalkyl group, R¹² represents a C₁₋₃ alkyl group or -R²⁶-OH, R²⁶ is a C₁₋₅ alkylene group and Z⁻ is an anionic group, and

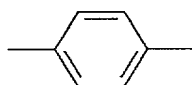
a compound selected from the following component (c) or (d):

(c) 0.1 to 15 % by weight of a compound represented by the formula

(3) and/or formula (4):

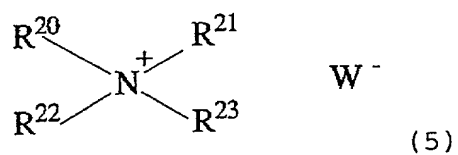


wherein R¹³ and R¹⁸ independently represent a C₅₋₁₉ alkyl or alkenyl group, R¹⁴ and R¹⁵ independently represent a C₁₋₃ alkyl or hydroxyalkyl group and T is -COO-, -OCO-, -CONH-, -NHCO-,



or a linkage, R¹⁶ represents a C₁₋₃ alkylene group, R¹⁷ represents a C₁₋₆ alkylene group or -(O-R¹⁹)_n-, R¹⁹ is ethylene group or propylene group and n is a number of 1 to 10 and W⁻ is an anionic group, and

(d) 0.01 to 15 % by weight of a compound represented by the formula (5):



wherein 2 or 3 groups out of R^{20} , R^{21} , R^{22} and R^{23} represent a C_{8-12} alkyl group, the remainder of them represent a C_{1-3} alkyl group, a C_{1-3} hydroxyalkyl group or a C_{7-15} arylalkyl group and Z^- is an anionic group.

Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者（下記の名称が複数の場合）であると信じています。

上記発明の明細書は、

☐ 本書に添付されています。

☐ ____月____日に提出され、米国出願番号または特許協定条約国際出願番号を____とし、
(該当する場合) ____に訂正されました。

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled.

SOFTENER COMPOSITION

the specification of which

☒ is attached hereto.

☒ was filed on November 9, 2000
as United States Application Number or
PCT International Application Number
PCT/JP00/07897 and was amended on
____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Japanese Language Declaration

(日本語宣言書)

私は、米国法典第35編119条 (a) - (d) 項又は365条 (b) 項に基づき下記の、米国以外の国の少なくとも一カ国を指定している特許協力条約365 (a) 項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願

11-323180	Japan
(Number)	(Country)
(番号)	(国名)
2000-102428	Japan
(Number)	(Country)
(番号)	(国名)
2000-114097	Japan
(Number)	(Country)
(番号)	(国名)

私は、第35編米国法典119条 (e) 項に基づいて下記の米国特許出願規定に記載された権利をここに主張いたします。

(Application No.)	(Filing Date)
(出願番号)	(出願日)

私は、下記の米国法典第35編120条に基づいて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約365条 (c) に基づく権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1条56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

(Application No.)	(Filing Date)
(出願番号)	(出願日)

(Application No.)	(Filing Date)
(出願番号)	(出願日)

私は、私自信の知識に基づいて本宣言書で私が行なう表明が真実であり、かつ私の入手した情報と私の信じているところに基づく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Claimed

優先権主張

12th Nov., 1999	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(Day/Month/Year Filed)	Yes	No
(出願年月日)	はい	いいえ
4th Apr., 2000	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(Day/Month/Year Filed)	Yes	No
(出願年月日)	はい	いいえ
14th Apr., 2000	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)	(Filing Date)
(出願番号)	(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration
(日本語宣言書)

委任状：私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。

(弁護士、または代理人の指名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

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(第三以降の共同発明者についても同様に記載し、署名すること)

(Supply similar information and signature for third and subsequent joint inventors.)

Japanese Language Declaration

(日本語宣言書)

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第五の共同発明者の氏名	Full name of fifth joint inventor, if any
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郵便の宛先	Post Office Address

第六の共同発明者の氏名	Full name of sixth joint inventor, if any
第六の共同発明者の署名	Sixth joint inventor's signature Date
住所	Residence
国籍	Citizenship
郵便の宛先	Post Office Address